WHAT IS CLAIMED IS:

1. A system for analyzing light from a sample in a separation system, comprising:

at least one separation lane;

a collection lens configured to receive and substantially collimate light emitted from the at least one separation lane;

a light dispersing element configured to spectrally disperse substantially collimated light from the collection lens; and

a reimaging lens configured to receive light from the light dispersing element and direct the light onto a light detection device.

2. The system of claim 1, wherein the system comprises a plurality of said separation lanes.

3. The system of claim 2, wherein the separation lanes comprise separation capillaries positioned in an planar array.

4. The system of claim 1, wherein the system comprises a single said separation lane.

5. The system of claim 1, wherein said light dispersing element comprises a transmission grating.

6. The system of claim 1, wherein said light dispersing element comprises a reflection grating.

7. The system of claim 2, wherein the light detection device is a multi-element photodetector configured to simultaneously analyze light from the plurality of separation lanes.

8. The system of claim 7, wherein the multi-element photodetector comprises a charge-coupled device (CCD).

9. The system of claim 1, wherein the light detection device is located at substantially the image plane of the reimaging lens.

10. The system of claim 1, further comprising a light source providing an excitation light to the at least one separation lane.

11. The system of claim 1, further comprising a substantially hemispherical optical element with a flat surface facing said sample and a hemispherically curved surface facing said collection lens, said substantially hemispherical element having a radius of curvature, the center of said radius of curvature being located substantially at an optical axis of the collection lens and substantially at or near an object plane of the collection lens.

12. The system of claim 11, wherein the radius of the hemispherical element is approximately equal to a distance between collection lens and the sample.

13. The system of claim 11, wherein the hemispherical element is comprised of at least one piece.

14. An optical system for analyzing light from a plurality of samples, comprising:

a plurality of sample holders;

a collection lens configured to receive and substantially collimate light from the sample holders;

a transmission grating configured to spectrally disperse substantially collimated light from the collection lens; and

a reimaging lens configured to receive light from the transmission grating and direct the light onto a light detection device.

15. The optical system of claim 14, further comprising an excitation light source for illuminating the sample holders.

16. The optical system of claim 15, wherein the light from the excitation light source does not pass through the collection lens prior to illuminating the sample holders.

17. The optical system of claim 14, wherein said system comprises a single said transmission grating.

18. The optical system of claim 14, wherein the plurality of sample holders comprise electrophoresis lanes.

19. The optical system of claim 18, wherein said lane is located in a capillary.

20. The optical system of claim 14, further comprising an optical filter positioned between the sample holder and the collection lens.

21. The optical system of claim 20, wherein said filter is an interference filter.

22. The optical system of claim 20, wherein said optical filter substantially blocks light.

23. The optical system of claim 22, wherein said optical filter is an interference filter.

24. The optical system of claim 22, wherein said optical filter substantially blocks light having a wavelength shorter than an excitation wavelength of the sample.

25. The optical system of claim 22, wherein said optical filter substantially blocks light having a wavelength substantially equal to the excitation wavelength wavelength of the sample.

26. The optical system of claim 14, further comprising an optical filter positioned between the collection lens and the reimaging lens.

27. The optical system of claim 18, wherein said optical filter is an interference filter.

28. The optical system of claim 26, wherein said optical filter substantially blocks light having a wavelength shorter than an excitation wavelength of the sample.

29. The optical system of claim 26, wherein said optical filter substantially blocks light having a wavelength substantially equal to the excitation wavelength wavelength of the sample.

30. The optical system of claim 14, wherein the light detection device is a multi-element photodetector configured to simultaneously analyze light from the plurality of sample holders.

31. The optical system of claim 14, wherein the light detection device is located at the image plane of the reimaging lens.

32. The optical system of claim 30, wherein the multi-element photodetector comprises a charge-coupled device (CCD).

33. The optical system of claim 30, further comprising an apparatus for tilting the multi-element photodetector with respect to the optical axis of the reimaging lens.

34. The optical system of claim 30, wherein the mutlit-element photodetector includes an anti-reflective coating.

35. The optical system of claim 30, further comprising an apparatus for tilting the reimaging lens with respect to the optical axis of the collection lens.

36. The optical system of claim 30, further comprising an apparatus for tilting the transmission grating with respect to the optical axis of the collection lens.

37. The optical system of claim 26, further comprising an apparatus for tilting the optical filter with respect to the optical axis of the collection lens.

38. The optical system of claim 14, further comprising an aperture positioned between the collection lens and the reimaging lens.

39. The optical system of claim 38, wherein the aperture is configured to provide substantially uniform light throughput.

40. The optical system of claim 39, wherein the aperture is in the shape of a football.

41. The optical system of claim 14, further comprising a correction lens positioned between the collection lens and the reimaging lens to reduce the curvature of the image on the light detection device.

42. The system of claim 14, further comprising a substantially hemispherical optical element with a flat surface facing said sample and a hemispherically curved surface facing said collection lens, said substantially hemispherical element having a radius of curvature, the center of said radius of curvature being located substantially at an optical axis of the collection lens and substantially at or near an object plane of the collection lens.

43. The system of claim 42, wherein the radius of the hemispherical element is approximately equal to a distance between collection lens and the sample.

44. The system of claim 42, wherein the hemispherical element is comprised of at least one piece.

45. An optical spectrograph for analyzing light from at least one sample, comprising:

at least one source of excitation light for illuminating at least one sample holder;

a first lens unit having at least one lens, said first lens unit configured to receive and substantially collimate light from the sample holder;

a transmission grating configured to spectrally disperse the substantially collimated light from the first lens unit;

a light detection device having a plurality of detector elements; and

a second lens unit having at least one lens, said second lens unit configured to receive the light from the transmission grating and direct the light onto the light detection device,

wherein said excitation light from the source of excitation light does not pass through the first lens unit prior to illuminating the sample in the at least one sample holder.

46. The optical spectrograph of claim 45, wherein the light detection device is located substantially at the image plane of the second lens unit.

47. The optical spectrograph of claim 45, wherein the optical spectrograph comprises a single said transmission grating.

48. The optical spectrograph of claim 45, wherein the optical spectrograph comprises a plurality of the sample holders.

49. The optical spectrograph of claim 48, wherein the plurality of sample holders comprise electrophoresis lanes.

50. A method of optically analyzing at least one sample, comprising:

providing at least one holder having a sample therein;

illuminating the sample with an excitation light to generate an emission light;

collecting the emission light emitted from the sample with a collection lens;

substantially collimating the emission light with the collection lens;

spectrally dispersing the substantially collimated emission light with a transmission grating;

directing the emission light from the transmission grating onto a light detection device by a reimaging lens; and

optically detecting the spectral characteristics of the emission light,

wherein said excitation light does not pass through the collection lens prior to illuminating the sample.

51. The method of claim 50, wherein the providing at least one holder includes providing a plurality of holders.

52. The method of claim 51, wherein the providing a plurality of holders includes providing a plurality of separation lanes.

53. The method of claim 52, wherein the plurality of separation lanes comprise capillaries for electrophoresis.

54. The method of claim 50, further comprising, prior to dispersing the substantially collimated light, blocking a portion of light of a predetermined wavelength or range of wavelengths using an optical filter.

55. The method of claim 54, wherein the optical filter comprises an interference filter.

56. The method of claim 50, further comprising, tilting the light detection device with respect to the optical axis of the reimaging lens so that the light is focused on a plane of the light detection device.

57. The method of claim 50, further comprising tilting the reimaging lens with respect to the optical axis of the collection lens so that the light is focused on a plane of the light detection device.

58. The method of claim 50, further comprising tilting the transmission grating with respect to the optical axis of the collection lens so that the light is focused on a plane of the light detection device.

59. The method of claim 54, further comprising tilting the optical filter with respect to the optical axis of the collection lens.

60. The method of claim 50, further comprising selectively blocking the light between the collection lens and the reimaging lens with an aperture.

61. The method of claim 60, wherein said selective blocking of the light provides for substantially uniform light throughput.

62. The method of claim 61, wherein said aperture is in the shape of a football.

63. The method of claim 50, further comprising coating the light detection device with an anti-reflective material.

64. The method of claim 50, further comprising positioning a correction lens between the collection lens and the reimaging lens to reduce curvature of the image on the light detection device.

65. The method of claim 64, further comprising placing a substantially hemispherical element between at least the collection lens and the object plane of the collection lens, and the reimaging lens and the image plane of the reimaging lens.